phosphate, $Fe_3(PO_4)_2$, instead of the traces of iron which are usually added to the Sachs solution as Fe_2Cl_6. It differs from PFEFFER'S and MAYER'S essentially in the use of tricalcium phosphate, $Ca_3(PO_4)_2$, instead of potassium phosphate, thus avoiding the acidity of these solutions. BENECKE has tested VON DER CRONE'S claims, some of which he finds justified, others not. The details are not of general interest.—C. R. B.

Prochromogens.—In further development of our knowledge of plant chromogens, PALLADIN[32] has found that these substances are not present in any considerable amounts at any time, but that they are formed gradually, from what he proposes to call prochromogens, which there is some ground for thinking are glucosides. These are split up by enzymes and the chromogens are produced in small amounts, except in the spring, when larger amounts may be observed. In dead plants the enzymes give rise to large amounts of the chromogens, because the splitting is then uncoordinated, and the oxidation of these leads to the observed blackening of the tissues.—C. R. B.

Light perception.—Besides the ocelli (in the sense of HABERLANDT), SCHÜRHOFF describes[33] apparatus in six species of Peperomia which may function in the perception of light, namely: the funnelform palisade cells, by reflecting the light to the chloroplasts at their base; the upper convex wall of the palisades, by acting as a lens; and the cluster crystals, that disperse to all the chloroplasts the light focused by the lenticular upper portion of the cell. These ideas seem even more strained than the theory they are adduced to support.—C. R. B.

Wetting of leaves.—AWANO[34] furnishes the ecologists a considerable body of statistics regarding the wetability (there ought to be such a word, if there is not) of leaves. Out of 264 plants examined as to this point, he finds 164, about $\frac{2}{3}$, wetable with difficulty or not at all, while the rest are easily wetable. Leaves of most strand and sand plants are hardly wetable, while those of shade plants and ferns are easily wetable. The details, presented in extensive tables, are combined with observations on the number and distribution of stomata.—C. R. B.

Extrafloral nectaries.—SALISBURY has described[35] the extrafloral nectaries of eight species of the genus Polygonum. He ascribes the secretory action to osmotic pressure of the gland cells, independent of root pressure, and thinks that the nectar glands, which are especially striking in tropical plants, represent originally hydatodes, which have in some cases later acquired a biological significance. He

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[32] PALLADIN, W., Ueber Protochromogene der pflanzlichen Atmungschromogene. Ber. Deutsch. Bot. Gesells. **27**: 101–106. 1909.

[33] SCHÜRHOFF, P., Ozellen und Lichtkondensoren bei einigen Peperomien. Beih. Bot. Centralbl. **23**: 14–26. *pls. 3, 4.* 1908.

[34] AWANO, S., Ueber die Benetzbarkeit der Blätter. Jour. Coll. Sci. Imp. Univ. Tokyo **27**: 1–49. 1909.

[35] SALISBURY, E. J., The extrafloral nectaries of the genus Polygonum. Annals of Botany **23**: 229–242. *pl. 16. figs. 6.* 1909.

finds that there is little reason to suppose that they are of any service in protecting the flowers from ants.—C. R. B.

Centrosomes in Marchantia.[36]—After a study of spermatogenesis in *Marchantia polymorphia*, SCHAFFNER concludes that IKENO'S account is correct and that centrosomes are present, both while the nucleus is at rest and while it is undergoing mitosis. His figures are practically the same as IKENO'S. MIYAKE'S failure to find centrosomes he attributes to differences in technic.—CHARLES J. CHAMBERLAIN.

Thermotropism.—POHL[37] describes observations and experiments that he has made upon the cultivated flax, which show its great sensitiveness to radiant heat, the young shoots directing themselves toward the source. Experiments also show that heat is the dominant factor in inclination of the shoots, which is often ascribed to light.—C. R. B.

Discomycetes.—MISS BACHMAN has published[38] a descriptive catalogue of the Discomycetes within five miles of Oxford, O. Keys to genera and species are provided, and there are illustrations of ten of the sixty-odd species, a goodly number of which are now for the first time reported from southwestern Ohio.—C. R. B.

Light and respiration.—LÖWSCHIN reports[39] that when he excluded the effects of actinic warming he was unable, in the course of twenty-two experiments upon the respiration of certain fungi (Aspergillus, Penicillium, Oidium, and Cladosporium), to detect any regular acceleration of it by light.—C. R. B.

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[36] SCHAFFNER, JOHN H., The centrosomes of *Marchantia polymorphia*. Ohio Naturalist **9**:383–388. *pl. 21*. 1908.

[37] Pohl, J., Der Thermotropismus der Leinpflanze. Beih. Bot. Centralbl. **24**:111–131. *figs. 6*. 1908.

[38] BACHMAN, FREDA M., Discomycetes in the vicinity of Oxford, Ohio. Proc. Ohio State Acad. Sci. **5**:19–70. *pls. 4*. 1909.

[39] LÖWSCHIN, A., Zur Frage über den Einfluss des Lichtes auf die Atmung der niederen Pilze. Beih. Bot. Centralbl. **23**:54–64. 1908.